

REMARKS

Claims 1,2, 4, 6-23, 25 and 27-43 are in the case and presented for reconsideration. Claims 3, 5, 24 and 26 have been cancelled. Claims 1, 4, 6, 21, 23, 25 and 27 have been amended. No new matter has been added.

The disclosure of the Applicant's Specification has been objected to since the Examiner considers that the Appendix referred to on Page 19 is improper and that Table 1 should be inserted into the Specification. As originally filed, Appendix Table 1 referred to on Page 19 of the Applicant's Specification is reflected in the Applicant's first drawing sheet appended to the Specification along with the other drawing sheets illustrating Figs. 1A – 5. As set forth in 37 C.F.R. § 1.84(d) and MPEP § 608.02, it is accepted practice that tables may be submitted in drawings. Additionally, as set forth in 37 C.F.R. § 1.58(b) tables must maintain spatial relationships (e.g. columns and rows) of the table elements and preserve the information they can convey. Accordingly, based on the amount of rows and columns in Applicant's Table 1 (in first drawing sheet) and the numerous data entries depicted therein, Applicant maintains that compliance with the Examiner's request to insert this table in the Specification appears to be impractical and appears to be in conflict with 37 C.F.R. § 1.58(b). Accordingly, the Examiner is respectfully requested to reconsider and withdraw this objection.

Claims 1-4, 7-11, 21-25 and 28-32 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant's admission of the prior art in view of U.S. Patent 5,280,222 (von der Heide et al.) and U.S. Patent 4,538,082 (Hinke et al.) or U.S. Patent 4,639,670 (Normann). Claims 5-6, 12-18, 20, 26, 27, 33-39 and 41 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant's admission of the prior art in view of von der Heide et al. and Hinke et al. or Normann as applied to Claims 1, 4, 11, 21, 25 and 32 above, and further in view of U.S. Patent 4,247,601 (Wiegand). Claims 19 and 40 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant's admission of the prior art in view of von der Heide et al. and Hinke et al. or Normann as applied to Claims 9 and 30 above and further in view of U.S. Patent 4,437,963 (Yeoman). Claims 21, 24, 25, 28-32, 41 and 42 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant's admission of the prior

art in view of European Patent 0348557 (Honkura et al.). Claims 21, 24, 25, 28-32 and 41-43 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant's admission of the prior art in view of U.S. Patent 6,270,591 (Chiriac et al.).

The Applicant's admission of the prior art, particularly that a position sensor of a medical device can be a Hall effect sensor, can be found in the Applicant's Specification, particularly on Page 1, Line 20 – Page 2, Line 22. As noted in the Applicant's Specification, the Hall effect sensor assembly described in U.S. Patent 5,558,091 suffer from problems such as nonlinearities, saturation effects, hysteresis and temperature drifts. Additionally, as described in Applicant's Specification, Page 6, Lines 22-26, until the Applicant's claimed present invention, there have been no position sensors (which include Hall effect sensors) or sensor coils that have outer diameters smaller in size than the diameters of the known sensors described previously and that are capable of achieving performance measures such as maintaining a high degree of accuracy at high temperatures.

Additionally, each of the cited prior art references used in the prior art rejections outlined above are merely general teachings derived from unrelated fields when compared to the particular field of the Applicant's claimed present invention (the navigated medical device field). Particularly, von der Heide et al. describes an apparatus and method for controlling brushless electric motors and position encoders and indicating the position thereof. Although this reference does relate to Wiegand effect sensors, it is clear that these sensors are used for either position determination or detection processes to the extent that they are used both in linear or rotary acting electric motors. Column 1, Lines 15-18, Lines 35-38, and Lines 46-49.

Hinke et al. describes a high-output magnetic field transducer suitable for use as a contactless ignition signal transducer (for example to replace mechanical breaker points in an ignition system for an externally ignited internal combustion engine) especially for automotive applications. Column 1, Lines 5-14.

Normann describes a magnetic field sensor comprising Wiegand wires or similar distable magnetic elements that is capable of delivering an individual pulse at a higher energy

content than the pulse usually delivered by a single bistable magnetic element and in which the higher pulse energy is produced without a need for a supply of electric power. Column 3, Lines 43-49. Particularly, the magnetic field sensor of Normann is specifically applied to the field of optical fiber links, for example, for use with a light-emitting diode used as a transmitter diode in an optical fiber link. Column 5, Lines 13-16.

Wiegand describes a switchable magnetic device made of Wiegand wire for use in an improved switching device in order to respond to an external magnetic field to produce a pulse having improved signal to noise ratio and a larger peak amplitude. Column 1, Lines 61-65.

Yeoman describes an apparatus for electrolyzing water. Although the Yeoman device utilizes Wiegand wire, it is clear that this device is directed to specifically to methods and apparatus for the electrolysis of water only. Column 1, Lines 35-42.

Honkura describes a soft magnetic stainless steel having good cold forge ability and merely mentions that this particular soft magnetic stainless steel can be used in association with magnetic sensors. Column 1, Lines 1-8.

Chiriac et al. describes amorphous and nanocrystalline glass-covered wires for applications in electrotechnics and electronics. Column 1, Lines 4-7.

Turning now to the Applicant's claimed present invention, Claim 1 has been amended in order to more particularly point out a medical device and position sensor combination comprising a medical device having a body; a position sensor attached to a portion of the body wherein the position sensor has a core made of Wiegand effect material and a winding circumferentially positioned around the core, and wherein the position sensor is used for determining position coordinates of the portion of the body of the medical device such that the position sensor maintains accuracy of ≤ 1 mm at temperatures greater than 75°C.

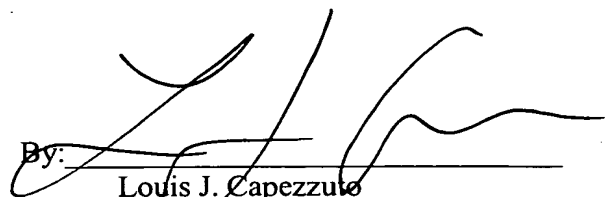
Claim 21 has been amended in order to more particularly point out a medical device and position sensor combination comprising a medical device having a body; a position sensor

attached to a portion of the body wherein the position sensor has a core made of a high permeable material that is a magnetic material that produces a magnetic field that switches polarity and causes a substantially uniform voltage pulse upon an application of an external field, wherein the position sensor is used for determining position coordinates of the portion of the body of the medical device such that the position sensor maintains accuracy at ≤ 1 mm at temperatures greater than 75°C.

It is clear that the cited prior art references outlined above are not only in an unrelated field when compared to the Applicant's claimed present invention as amended, but also constitute non-analogous art. Accordingly, one of ordinary skill in the field of the Applicant's claimed present invention (the navigated medical device field) would never be led to these references. Additionally, if one of ordinary skill in this particular field were to be led to these references, there is no teaching in any of these references that would ever lead this skilled artisan to combine these references in the manner suggested by the Examiner. Additionally, even if this skilled artisan were to combine these references in this suggested manner, this skilled artisan would not in any way ever arrive at the Applicant's claimed present invention without having to rely on the Applicant's own Specification as a blueprint.

Accordingly, by this Amendment and for the reasons listed above the Applicant's claimed present invention is neither anticipated by nor rendered obvious by these references and favorable action is respectfully requested.

Respectfully submitted,

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Dated: May 11, 2004